

REMARKS

Claims 1, 18, 19, 20 and 34 have been amended. Claims 1-47 remain pending in the application. Reconsideration is respectfully requested in light of the following remarks.

Section 102(b) Rejection:

The Examiner rejected claims 1, 8, 11-20, 29-34, 40 and 43-47 under 35 U.S.C. § 102(b) as being anticipated by Sitka (U.S. Patent 6,330,572) (hereinafter "Sitka"). Applicants respectfully traverse this rejection for at least the reasons below.

In regard to claim 1, Applicants respectfully assert that Sitka does not teach the invention as disclosed in claim 1 of the present application as originally provided. However, Applicants have amended claim 1 for further clarity.

Applicants note that Sitka teaches a "system and method for managing the storage of files within an HSM system" (column 1, lines 64-65). In the Background section (column 1, lines 15-60), parts of which were cited by the Examiner in the rejection of claim 1, and relevant parts of which are cited below, Sitka describes the operations of Hierarchical Storage Management (HSM) systems. The underlined parts are further discussed below to highlight the above-cited distinction between what Sitka teaches and what is disclosed in claim 1 of the present application:

Hierarchical storage management (HSM) systems allow the managed storage of data files among a variety of media such as magnetic hard disks, magneto-optic disks, and magnetic tape. The various media differ in access time, capacity, and cost. Thus, HSM systems typically are configured such that files that are accessed more frequently or created more recently are stored on "short-term" media having the shortest access time. Short-term media often includes a group of magnetic disks, which may be arranged as a redundant array of independent disks (RAID). Files that are accessed less frequently, created less recently, or have larger sizes are stored on "long-term" media having longer access times and larger storage capacities. Long-term media in an HSM system may include

rewritable optical disks and magnetic tape media, which can be arranged in a jukebox of magneto-optical disks or a tape library, respectively.

... A central database maintains the storage location of each file within the HSM system. If users do not request a particular file for an extended period of time, the system automatically migrates the corresponding file to the longer-term storage media and updates the file location database.

... When a user requests a particular file, the system accesses the database to determine the current location of the file. If the desired files reside on longer-term storage media, the system automatically retrieves the files and moves them to the short-term media. If some of the media is not currently loaded into the longer-term storage device, the system generates a request for personnel to physically locate the media and load it into the storage device.

Applicants further note that the Background section of the present application also describes the operation of an HSM system. Again, the underlined parts are further discussed below to highlight the above-cited distinction between what Sitka teaches and what is disclosed in claim 1 of the present application:

Rather than making copies of files as in a backup system, HSM migrates files to other forms of storage, freeing hard disk space. Events such as crossing a storage threshold and/or reaching a certain file "age" may activate the migration process. As files are migrated off primary storage, HSM leaves stubs to the files on the hard drive(s). These stubs point to the location of the file on the alternative storage, and are used in automatic file retrieval and user access. The stub remains within the file system of the primary storage, but the file itself is migrated "offline" out of the file system onto the alternative storage (e.g. tape).

In HSM, when a file that has been migrated to a lower rank of storage, such as tape, is accessed by an application, the stub may be used to retrieve and restore the file from the lower rank of storage. The file appears to be accessed by the application from its initial storage location, and demigration of the file back into the file system is performed automatically by the HSM system using the stub: While on the surface this demigration may appear transparent to the user, in practice the process of accessing and restoring the file from offline storage (e.g. tape) may introduce a noticeable time delay (seconds, minutes, or even hours) to the user when compared to accessing files stored on primary storage. Thus, accessing offloaded data in an HSM system is typically non-transparent to the application or user because of the difference in access time. In addition, since HSM introduces a substantial time lag to access offloaded data, HSM systems typically only offload low access (essentially, no access) data.

As noted, the above citations from the cited reference and the present application highlight a distinction between what Sitka teaches and what is disclosed in claim 1 of the present application. Namely, this distinction is that an HSM system as disclosed by Sitka, when migrating files from “short-term media” to “long-term media”, migrates files/data offline (i.e., the data is no longer “online” in the file system), whereas claim 1 of the present application discloses a multi-class file system wherein data migrated from a first storage class to a second storage class remain online within the file system. In the HSM system disclosed by Sitka, files migrated to long-term media are migrated offline and thus out of a file system on the short-term media and onto long-term media. As disclosed by Sitka, all that remains online within the file system on the short-term media is location information maintained in a “central database”. Applicants note that the central database disclosed by Sitka is functionally equivalent to the “stubs” as disclosed in the cited background section of the present application. In both cases, the file/data is migrated offline, while only location information remains online in the file system.

In several places Sitka explicitly mentions that his system migrates data offline. For example, in column 5, lines 58-60, Sitka states:

The screen resolution and thumbnail versions can be "locked" down on the short-term media, such as a RAID, and never allowed to migrate offline to tape.

As another example, in column 27, lines 43-48, Sitka states:

The high resolution versions of the film images can be migrated offline. At the outset, when the images are checked into DSM system 10, the thumbnail, screen resolution, and high resolution images can all be stored on the short-term media, subject to subsequent migration of the high resolution images.

Furthermore, in the HSM system as disclosed by Sitka that migrates files/data offline to “long-term storage”, the files/data are not directly readable or modifiable by “users” while on the long-term storage (and thus offline). As Sitka discloses in the above citation, any access, even a read access, initiated by a user on a file

that has been migrated to long-term storage requires that the file be retrieved from long-term storage media and moved back to short-term storage media. The access request is then fulfilled from the short-term storage media. Further, retrieving a migrated file for a user may require media to be loaded into a long-term storage device:

When a user requests a particular file, the system accesses the database to determine the current location of the file. If the desired files reside on longer-term storage media, the system automatically retrieves the files and moves them to the short-term media. If some of the media is not currently loaded into the longer-term storage device, the system generates a request for personnel to physically locate the media and load it into the storage device.

Applicants note that the present application, as made clear in the currently modified claim 1, discloses that data migrated from a first storage class to a second storage remains online in the multi-class file system, and that the migrated data, while not modifiable by applications (users) while on the second storage class, is readable by applications (users) while on the second storage class. Thus, data migrated to the second storage class remains online within the multi-class file system and thus accessible to applications (users) via the file system for read operations, but not for write operations. The data is not migrated offline, and does not need to be moved to the first storage class for read-only access by the applications.

In further regard to claim 1, Examiner asserts that Sitka teaches a “backup mechanism configured to back up the second storage class less frequently than the first storage class”, and cites column 26, line 28 through column 27, line 4. After examining the cited reference, Applicants respectfully assert that the Examiner has mischaracterized or misinterpreted the teachings of Sitka. **Applicants respectfully assert that the cited reference does not teach or suggest anything like what claim 1 of the present inventions discloses as “a backup mechanism configured to back up the second storage class less frequently than the first storage class.”**

Thus, for at least the reasons above, the 102(b) rejection of claim 1 is not supported by the cited reference and removal thereof is respectfully requested. Similar remarks also apply to claims 18, 19, 20 and 34.

Section 102(e) Rejection:

Claims 1, 8, 11-20, 29-34, 40 and 43-47 were rejected under 35 U.S.C. § 102(e) as being anticipated by Greenblaat et al. (U.S. Publication 2005/0033757) (hereinafter “Greenblaat”). Applicants respectfully traverse this rejection for at least the reasons below.

In regards to claim 1, Applicants respectfully assert that Greenblaat does not teach or suggest the invention as disclosed in claim 1 of the present application as originally provided. However, Applicants have amended claim 1 for clarity.

Examiner asserts that Greenblaat discloses a system including file system software configured to assign and migrate data in a multi-class file system comprising a plurality of storage classes. Examiner cites page 1, paragraph [0012], of Greenblaat, and states that “the storage resources may be hierarchically organized based upon cost, speed, capacity, and other factors.” Applicants note that this citation is in the Background section of Greenblaat, and is simply describing Hierarchical Storage Management (HSM) systems which were discussed at length above in regards to the Sitka reference.

Examiner further asserts that Greenblaat discloses file system software configured to “provide access to the data in the multi-class file system to one or more applications; and migrate data that has not been modified for a given time interval from a first storage class of the plurality of storage classes to a second storage class of the plurality of storage classes.” Examiner cites page 3, paragraph [0040], of Greenblaat, and states that “when a migration operation is performed, a portion of the file is migrated or moved from an original volume to a repository storage location.” Examiner also asserts that Greenblaat discloses “wherein the data is not modifiable by the one or more applications while the

data is on the second storage class.” Examiner cites page 4, paragraph [0043], and states that “when a request is received to access the migrated file, a recall operation is performed and the migrated file is recalled or moved from the repository storage location.” The fact that Greenblaat teaches that a migrated file must be “recalled” or “demigrated” to be accessed is made clear in page 4, paragraph [0041]:

When a request is received to access the migrated file, the repository storage location of the migrated data corresponding to the stub file is determined and the migrated file data is recalled (or demigrated) from the repository storage location back to the original storage location.

Applicants note that, as in the above response to the Examiner’s 102(b) rejection in light of the Sitka reference, there is a clear distinction between what Greenblaat teaches in the Examiner’s citations and what is disclosed in claim 1 of the present application, and that distinction has been clarified in the currently modified claim 1. **Namely, this distinction is that the system as disclosed by Greenblaat, when migrating files from an “original storage location” to a “repository storage location”, migrates files/data offline to a “repository storage unit”, wherein claim 1 of the present application discloses a multi-class file system wherein data migrated from a first storage class to a second storage class remain online within the file system.** In the system disclosed by Greenblaat, files migrated to a “repository storage location” are migrated offline and thus out of a file system on the “original storage unit” and onto a “repository storage unit”. As disclosed by Greenblaat, all that remains online within the file system on the original storage unit is location information maintained in stubs.

Furthermore, in the system as disclosed by Greenblaat that migrates files/data offline to a “repository storage unit”, the files/data are not directly readable or modifiable while on the repository storage unit (and thus offline). As Greenblaat discloses in paragraph [0043], any access, even a read access, initiated on a file that has been migrated to a repository storage unit requires that the file be retrieved from the repository storage unit and moved back to the original storage location on an original storage unit:

A recall operation is generally performed upon receiving a request to access a migrated file. In a recall operation migrated data for a migrated file is recalled or moved from the repository storage location (on the repository storage unit) back to the original storage location on the original storage unit.

Applicants note that the present application, as made clear in the currently modified claim 1, discloses that data migrated from a first storage class to a second storage remains online in the multi-class file system, and that the migrated data, while not modifiable by applications while on the second storage class, is readable by applications while on the second storage class. Thus, data migrated to the second storage class remains online within the multi-class file system and thus accessible to applications (users) via the file system for read operations, but not for write operations. The data is not migrated offline, and does not need to be recalled from the second storage class or moved to the first storage class for read-only access by the applications.

In further regard to claim 1, Examiner asserts that Greenblaat teaches a “backup mechanism configured to back up the second storage class less frequently than the first storage class”, and vaguely states “migration and backup” as evidence of this assertion. After examining the Greenblaat reference, Applicants respectfully assert that the Examiner has mischaracterized or misinterpreted the teachings of Greenblaat. **Applicants respectfully assert that the Greenblaat reference does not teach or suggest anything like what claim 1 of the present inventions discloses as “a backup mechanism configured to back up the second storage class less frequently than the first storage class.”** Greenblaat simply mentions “backup” operations in several places. Applicants note that “migration” refers to migrating files/data from one storage unit to another in the case of Greenblaat or from one storage class to another storage class in the case of the present application, and that the notion of migration is distinctly different than a backup mechanism or operation in both cases.

Furthermore, Greenblaat does not appear to be a prior art reference. More specifically, Greenblaat is a published U.S. patent application that was filed on Jun. 24, 2004, after Applicants’ filing date of Dec. 31, 2003. Greenblaat does claim the benefit of

several earlier filed applications. However, the filing date of one of Greenblaat's earlier filed applications can only be used as a U.S.C. § 102(e) prior art date for the subject matter that is common to both the published application and the earlier filed application. From an examination of the applications on PAIR, Greenblaat's published application appears to vary greatly from his earlier filed applications. Accordingly, it is unclear whether the material in Greenblaat relied upon by the Examiner was actually present in any of Greenblaat's earlier applications. The Examiner must show that all of the subject matter on which the Examiner is relying on to reject Applicants' claims is also present in one of Greenblaat's earlier applications. Until the Examiner has made this showing, the rejection is improper. *See, In re Wertheim*, 209 USPQ 554 (CCPA 1981).

Moreover, Greenblaat's published application is not entitled to the filing date of one of his earlier filed applications as a section 102(e) prior art date unless at least one claim of Greenblaat's published application is supported (under 35 U.S.C. § 112) in the earlier filed application. Under 35 U.S.C. §§ 119(e)(1) and 120, a published utility application is not entitled to an earlier application's filing date as a prior art date unless at least one claim of the published utility application is supported (per 35 U.S.C. § 112) in the earlier application. Since the disclosures of Greenblaat's earlier applications differ greatly from Greenblaat's published application, it is not at all clear whether this requirement is met. The rejection is improper unless the Examiner can show that Greenblaat's published application has the necessary claim support in one of Greenblaat's earlier applications to be entitled to the earlier application's filing date as its § 102(e) prior art date. *See also* M.P.E.P. § 2136.03(IV).

The Examiner has the burden of proof to produce the factual basis for the rejection. *In re Warner*, 154 USPQ 173, 177 (C.C.P.A. 1967), *cert. denied*, 389 U.S. 1057 (1968). Since the Examiner has not proven that both of the above requirements have been met for Greenblaat to qualify as prior art, the Examiner has not met this burden of proof and the rejection is improper.

Thus, for at least the reasons above, the 102(e) rejection of claim 1 is not supported by the cited reference and removal thereof is respectfully requested. Similar remarks also apply to claims 18, 19, 20 and 34.

Section 103(a) Rejection:

The Examiner rejected claims 2, 3, 6, 7, 21, 22, 25, 26, 35, 36 and 39 under 35 U.S.C. § 103(a) as being unpatentable over Sitka in view of Bolan et al. (U.S. Patent 6,317,747) (hereinafter “Bolan”). Applicants respectfully traverse this rejection for at least the reasons cited above for the independent claims in regards to the Sitka reference. Accordingly, removal of the 35 U.S.C. § 103(a) rejections is respectfully requested.

Regarding the § 102(b), § 102(e) and § 103(a) rejections, Applicants also assert that numerous ones of the dependent claims recite further distinctions over the cited art. However, since the rejections have been shown to be unsupported for the independent claims, a further discussion of the dependent claims is not necessary at this time.

Allowable Subject Matter:

Claims 4, 5, 9, 10, 23, 24, 27, 28, 37, 38, 41 and 42 were objected to as being dependent upon a rejected base claim, but otherwise allowable if rewritten in independent form. However, since the rejections have been shown to be unsupported for the independent claims, the Objection to these claims is moot, and thus it is not necessary for Applicants to rewrite said claims in independent form.

CONCLUSION

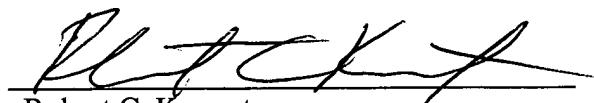
Applicants submit the application is in condition for allowance, and prompt notice to that effect is respectfully requested.

If any extension of time (under 37 C.F.R. § 1.136) is necessary to prevent the above-referenced application from becoming abandoned, Applicants hereby petition for such an extension. If any fees are due, the Commissioner is authorized to charge said fees to Meyertons, Hood, Kivlin, Kowert, & Goetzel, P.C. Deposit Account No. 501505/5760-15000/RCK.

Also enclosed herewith are the following items:

- Return Receipt Postcard
- Petition for Extension of Time
- Notice of Change of Address
- Other:

Respectfully submitted,



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